

**2017 ACORN Conference & Trade Show
Best Western Glengarry - Truro, NS**

Workshop Title: Considerations for Beginner Greenhouses

Speakers: Fran and Mark Day, Codiac Organics

Executive Summary: A well-thought out greenhouse, equipped with the right tools, features, and knowledge can add value and production capacity to a farm.

Fran and Mark own a small 5 acre farm in Moncton - Codiac Organics. They have been farming full time for only 2 years; reclaimed 2 acres of woods 2 years ago.

Start to finish: 32 days to erect in 2014

Greenhouse Research:

- First project on farm; chose Harnois Oval Tech3: 30'x100' (Quebec company - French language skills valuable).
 - Their greenhouse holds 9 raised bed plots - 100' each.
 - Polycarbonate on one end (south), wood on the other (hemlock & plastic with equipment door).
 - Used a 4' girth between each rib, although every 6' was recommended.
 - Lots of snow around Moncton - typically clear snow away around greenhouse, but left it in place for insulation: worked and didn't compact layers of plastic!
- Community construction: neighbours were concerned about clearing of trees, but got interested when they realized it wasn't for housing development, but for a greenhouse!
- Checked out others that used that design - picked peoples' brains:
 - Assistance from Charles Leblanc and Claude Berthélmé (DAAF)
 - Made notes and adjustment for their own construction:
 - Location: trees, wind
 - Water: either run through or run-off from plastic cover.
 - Build a good, level base: move topsoil off, sloped away to ditch on either side; brought a dozer in for a couple days - \$\$

Building your own base: plan of action:

- Preassemble components (it took about 3 days; can be done ahead of time)
- Instructions are very valuable! Review ahead of time.
- Manual vs mechanical insertion of ground posts (opted for manual to avoid further compaction of soil, although it was hard work)

- Laser level for base post
- 1' topsoil back on top of base

Considerations:

- Orientation - N/E/S/W
- Building credibility (community interest in greenhouse vs. clearing for housing, etc.)
- Grants (GF2 - Season extension)
 - Annual maximums - first year, then opens doors for future years funding
 - Structure (fall)
 - Heat (spring)
 - Water (spring)
 - Ventilation (spring)
- Electrical in Year 2 - a luxury but worth it!
 - Ran underground from street
 - Large panel
 - Outlets down both sides of the structure
 - Motion sensor lights outside; LED lights inside
 - Fans (\$200-400 fans from distributor, purchased at Costco for \$60 w/warranty)

Heating:

- Enough to bring temp up to 20C.
- Chose propane; only heat through spring/summer/fall, not winter.
 - Would need other source to heat in winter: tested once on a -10C night to bring up to 20C, costed about \$70 (not worth it).
- Maine Farmer running off-grid: cost \$160k USD but now heating 7 greenhouses with geothermal energy!

Irrigation:

- Property is on city water, so they dug well - 150' deep
- 5HP submersible pump with constant pressure gauge (\$1000)
- Use sprinklers in field and drip irrigation
- Electrical and pipe dug 6' deep all around field
- Rainwater catchment possible (they do not); collection basin down both sides, funnel to one end into 1000L tank, then water from there.
- Drip inside through summer or sprinklers (30') through winter - must be taken apart at night.

Q&A:

Q) Do you heat water for winter use?

A) Holding tanks can be painted black - Fran & Mark do not heat their water in the winter and have not logged any issues.

Q) Do you do 12 months of production?

A) Yes (fruiting plants + greens production; if you can get 75% growth by first of December, they will grow all winter)

Q) Do you water in Dec?

A) Yes - sprinklers, not drip. Can add fertilizer (crab meal & chicken manure - cannot use continually over years due to high salt/sodium content). Test using hydrometer; probably water less in winter. Summer 15 min x 3/day.

Pollination - Fran and Mark were involved in NB greenhouse trial

- Learned a lot in 1st and 2nd summer.
- No bee hives. At 2pm daily, they rap the top wires which causes vibration - enough to pollinate tomatoes.
- Fine Insect netting over roll-up sides (\$200 for 100') - plants were getting beat up due to wind.
 - Used snow fencing w/1" holes in yr 2 - holes big enough for bees, but offers wind protection (\$50 for 50' roll?); stays up all summer
 - Helps with shading as well
- Poly repair tape - clear Gorilla tape recommended for plastic repairs.

Overall cost \$30k (not including well); \$15k out of pocket paid off in first 2 years

What would you do differently:

- Trenched with insulation up both sides; backfilled - "grey board" R16-20 or rubber tires (not org)
- Mechanical auger for posts
- Consider a moving greenhouse
- Mechanical/auto rollup sides
- Auto irrigation system

Purchased 2nd hand 15-20' GH to use as farm stand - adjacent to large greenhouse so customers are able to see production.

Q) How many lb of production do you get?

A) 5 rows; double headed plants - 1100 heads; about 15,000lb? No disease, sold all from stand, mid-week market, and CSA \$2.99-\$4.99/lb processing at \$1.99/lb

Q) Would it be standard to recoup cost in 2 years?

A) Unsure, maybe 5yrs standard.

Q) Staff? How many employees do you have?

A) None yet, but we need employees next year! (2 acres production + greenhouse + highbush blueberries)

Q) Do you have issues with growing tomatoes year after year?

A) They have a 7 year rotation including the greenhouse

Q) How established was your business/customer base before investment?

A) They are baby boomers with health issues - they did not have an established customer base; upfront investment with a customer base that came after the fact: 5 year plan.

Q) Is your farm certified organic? Time for transition?

A) Yes. And the land was Certified before getting started (was an organic farm for a long time). They don't find the costs to be prohibitive - \$700 + % of revenue/production. Certification is important to some and not others - customers are now very educated and are asking the right questions.

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